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Jun 18, 2009 08:02



**Worldwide Facilities Group
Remediation Team**

MC 483-520-190
2000 Centerpoint Parkway
Pontiac, Michigan 48341

June 28, 2007

Mr. Daniel Patulski, DP-8J
U. S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Dear Mr. Patulski:

RE: AOI 28 Additional Investigation and Summary of Excavation Activities
13000 Eckles Road Site (U. S. EPA ID No. MID 065 356 621)
Livonia, Michigan

This letter has been prepared to provide documentation of the additional soil sampling and excavation activities conducted in Area of Interest (AOI) 28 – Oil Storage Building Yard Area, located at the General Motors Corporation (GM) 13000 Eckles Road Site (Site) located in Livonia, Michigan. The Site location is presented on Figure 1. A Site plan is presented on Figure 2.

1.0 BACKGROUND

General Motors Corporation (GM) has completed the corrective measures for the entire Site that were described in United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) Final Decision and Response to Comments dated March 13, 2006, document, except for implementation of certain institutional controls which are in progress. GM decided to perform additional soil excavation at AOI 28 to expedite redevelopment activities at the Site. These additional excavation activities were not required as part of the Final Decision.

AOI 28 –Oil Storage Building Yard Area

As discussed in the Current Conditions Report (CCR), the Oil Storage Building Yard Area was located north of the main plant and west of the incinerator building. Various containers of production fluids and oil were stored in this area. Various volatile organic compounds (VOCs) have been historically detected in groundwater in AOI 28 above screening criteria. Although these VOCs exceed the Industrial Drinking Water Criteria, groundwater is not used as a drinking water source at or in the vicinity of the Site and therefore the groundwater poses no unacceptable risks. Additionally, GM has recorded a Restrictive Covenant for the Site that prohibits groundwater use on the Site for any purpose.

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In February 2007, additional soil data was collected by ASTI Environmental (ASTI) at the Site as part of due diligence activities for a potential buyer. Among the ASTI samples located in AOI 28, the sample at AOC-23-4 had a benzo(a)pyrene concentration of 110 mg/kg. This concentration is higher than the concentrations in GM's RFI data set for AOI 28 and other ASTI samples at AOI 28; however, it is not higher than benzo(a)pyrene concentrations in AOI 27, which is adjacent to AOI 28. These concentrations do not pose an unacceptable risk to human health. Nevertheless, GM elected to further characterize the benzo(a)pyrene concentrations in this area.

2.0 SCOPE OF WORK - ON-SITE ACTIVITIES

Additional Soil Delineation

Additional soil samples were collected in AOI 28 to further characterize benzo(a)pyrene concentrations around soil boring AOC-23-4. GM collected 14 soil samples and analyzed them for semi-volatile organic compounds (SVOCs). A summary of additional soil samples collected in 2007 is presented in Table 1. The additional soil sample locations from 2007 to refine the benzo(a)pyrene concentrations are presented on Plan 1, along with all AOI 28 sample results collected during the RCRA Facility Investigation, ASTI sampling, and additional soil sampling events. A summary of the analytical results of the additional soil samples is presented in Table 2. A data validation memorandum is presented in Attachment A.

As shown on Plan 1, the additional samples collected around boring AOC-23-4 adequately characterized the horizontal and vertical extent of the elevated benzo(a)pyrene concentration that was found at boring AOC-23-4. Based on these results, GM decided to excavate soil from around this location to facilitate site redevelopment. Plan 2 shows the extents of excavation and analytical results of soil samples representing soil remaining in place following the excavation.

Surveying

Prior to mobilization, the excavation area was surveyed and marked based on RFI, ASTI, and additional soil sample locations.

Mobilization/Site Preparation

Inland Waters Pollution Control (IWPC) mobilized to the Site on June 12, 2007. Activities completed included constructing a haul road and staging area for equipment and trucks.

Soil Excavation

Soils identified for removal were excavated using a Caterpillar 330 hydraulic excavator on June 13 and 14, 2007. The limits of excavation were marked in the field prior to excavation. Plan 2 and Figure 3 show the final excavation area and depths. Excavated soils were transferred directly from the excavation into haul trucks.

A total of approximately 996 tons of excavated soils were disposed of at Woodland Meadows Recycling and Disposal Facility in Van Buren Township, Michigan. Analytical results of the soil samples representing the excavated soil are presented in Table 3.

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Verification Sampling

Post excavation verification sampling was not necessary since the excavation limits extended up to the existing sample points both horizontally and vertically. Analytical results of soil remaining in place following the excavation activities at AOI 28 are presented on Plan 2.

Transportation and Off-Site Disposal

The excavated soils from AOI 28 were managed as “non-hazardous” waste. The soils removed during additional excavation activities were disposed of at Woodland Meadows Recycling and Disposal Facility in Van Buren Township, Michigan. Transportation and disposal information is presented in Attachment B.

Backfilling

The excavation was backfilled on June 14 and 15, 2007 with clean fill imported from Edward Levy Co.’s American Aggregate – Bruno Road Plant in Wixom, Michigan. As the fill was placed into the excavation, it was spread by a dozer in approximate 1-foot lifts and compacted. Borrow source documentation is presented in Attachment C.

Site Restoration and Demobilization

All materials, equipment, and supplies brought onto the Site for the excavation activities were removed following the final stage of the backfilling activities.

Documentation

During completion of the soil sampling and excavation activities, a logbook was maintained to document all activities completed on site including weather, personnel participating in the sampling and excavating activities, cleanup activities conducted, and other relevant information.

Updated Risk Estimates

GM also updated the risk estimates for AOI 28 to reflect conditions that exist after the soil excavation. Risk estimates for AOI 28 had been calculated based on the GM and ASTI data, and were presented in Tables 2, 3, and 4 of GM’s April 24, 2007 letter to USEPA regarding assessment of the ASTI data entitled “Assessment of Additional Soil Data Relative to RCRA Corrective Action Conclusions”. These risk estimates have been updated by including data from GM’s additional soil samples and excluding the data that represent the soil that has been excavated. The original and updated risk estimates are as follows:

		Original	Updated
Routine Worker Exposure to Soil via Direct Contact	Cumulative Cancer Risk	1E-04	6E-05
	Hazard Index	2E-01	1E-01
Routine Worker Exposure to Soil via Vapor Intrusion	Cumulative Cancer Risk	4E-06	4E-06
	Hazard Index	2E-02	2E-02
Site Redvpm Construction Worker Exposure to Soil	Cumulative Cancer Risk	4E-05	2E-05
	Hazard Index	1E+00	7E-01

The largest reduction between the original and updated estimates is in the cumulative cancer risk estimate for exposure of routine workers via direct contact with soil. Details of the updated risk calculations for this exposure scenario are provided in Attachment D.

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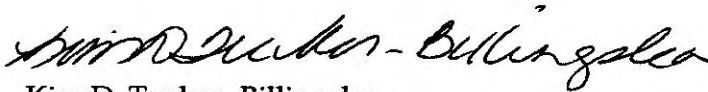
3.0 CONCLUSION

Based on the additional activities completed including soil sample collection, soil excavation, and backfilling, soils identified to have elevated benzo(a)pyrene concentrations were removed and disposed of at an appropriate facility.

If you have any questions regarding the information provided in this letter, please call me at 248-753-5800.

Yours truly,

GENERAL MOTORS CORPORATION,



Kim D. Tucker -Billingslea
Project Manager

KTA/kta/12607/28/Det.
Encl.

c.c.: Richard Conforti (MDEQ)
Jean Caufield (GM)
Chris Meincke (CRA)
Ian Richardson (CRA)

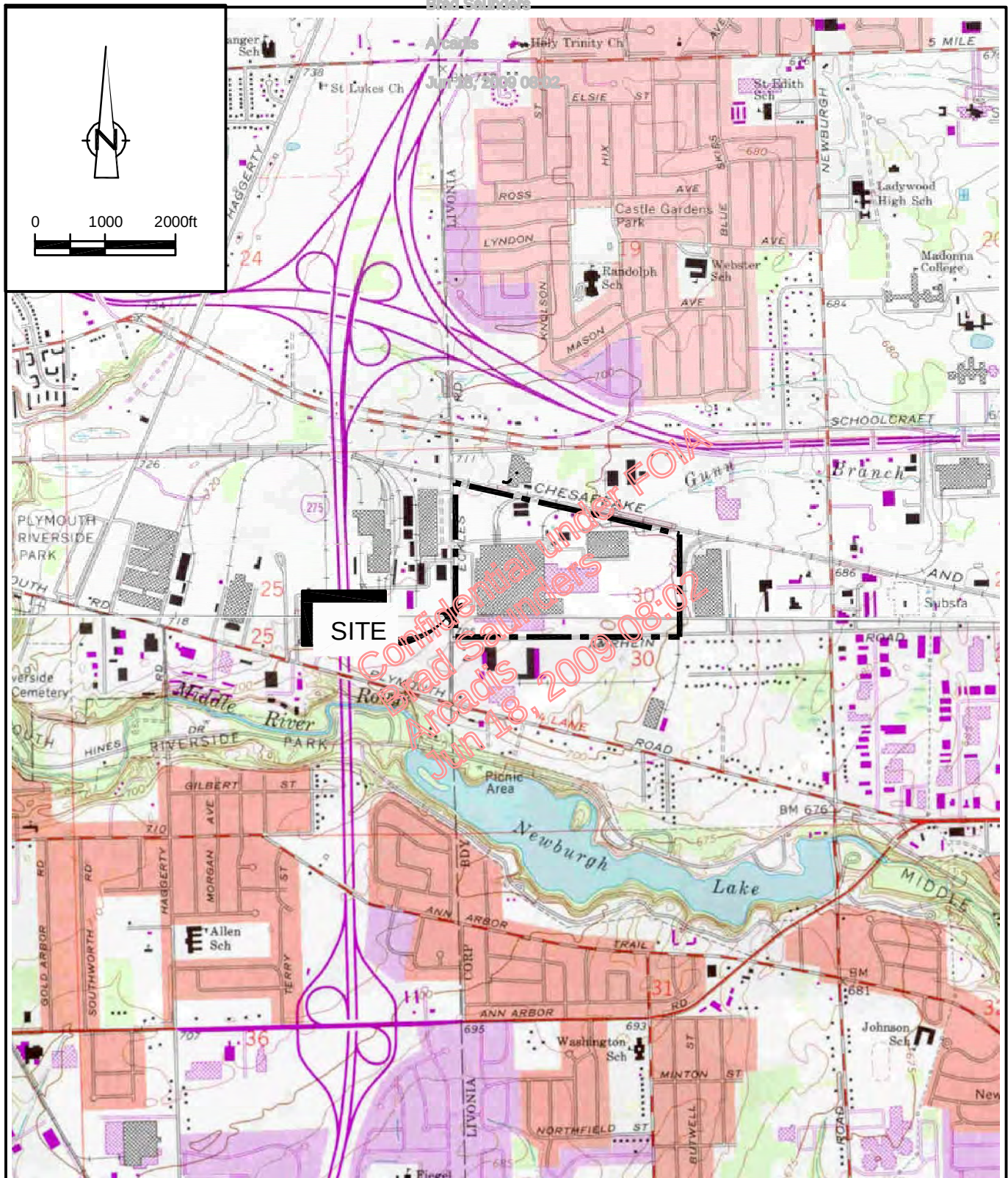
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SOURCE: USGS QUADRANGLE MAPS;
NORTHVILLE AND WAYNE, MICHIGAN

figure 1



LIVONIA

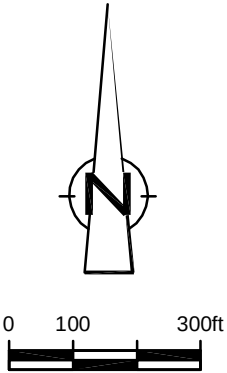
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SITE LOCATION
13000 ECKLES ROAD SITE
Livonia, Michigan

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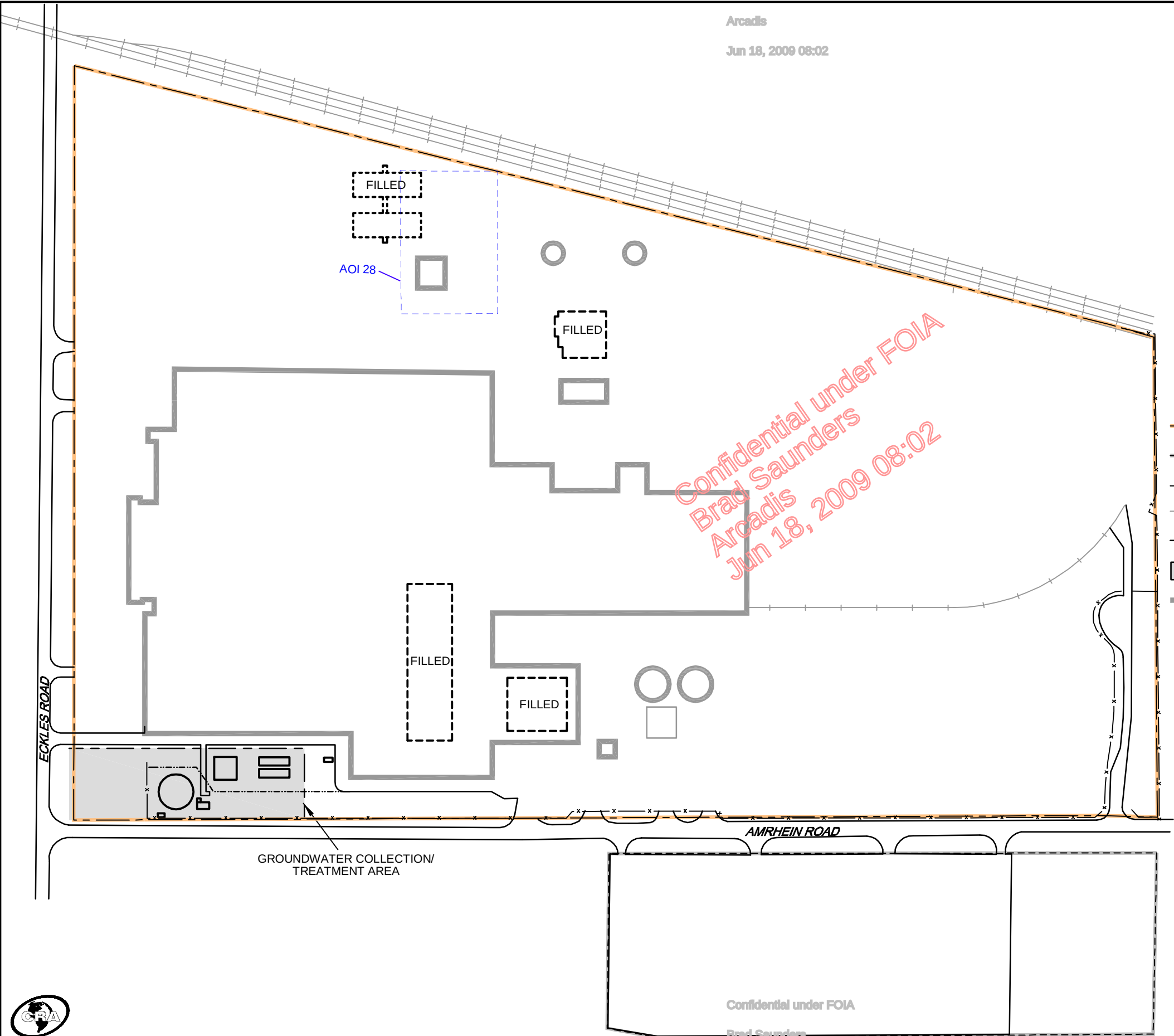
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LEGEND

AOI 28 - OIL STORAGE BUILDING YARD AREA

- SITE BOUNDARY
- HISTORIC PORTION OF FACILITY
NO LONGER PART OF SITE
- FENCE
- RAILWAY
- FRENCH DRAIN COLLECTION SYSTEM
- GROUNDWATER COLLECTION/TREATMENT AREA
- CONCRETE SLAB



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figure 2
CURRENT SITE PLAN
13000 ECKLES ROAD SITE
Livonia, Michigan



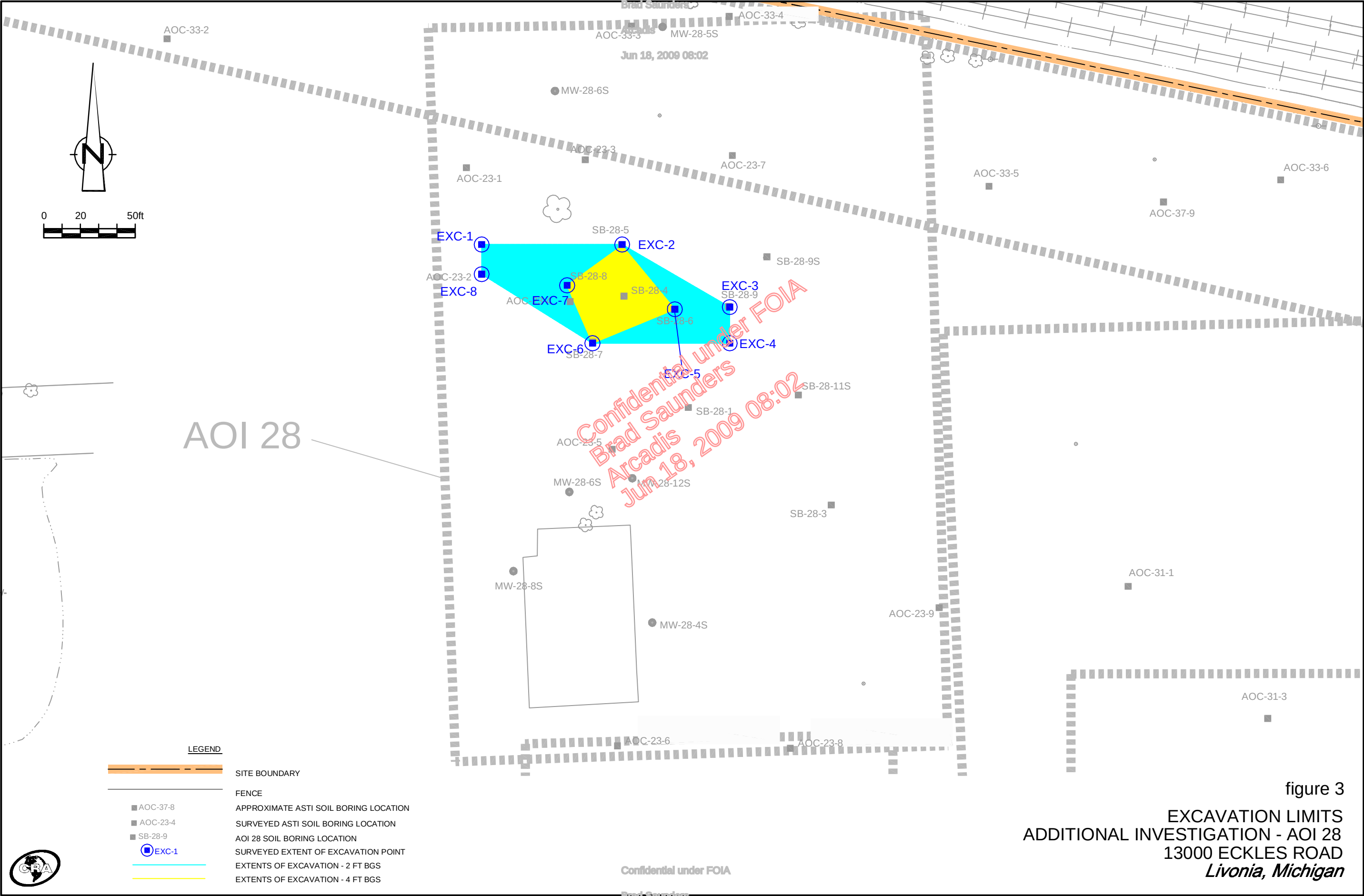
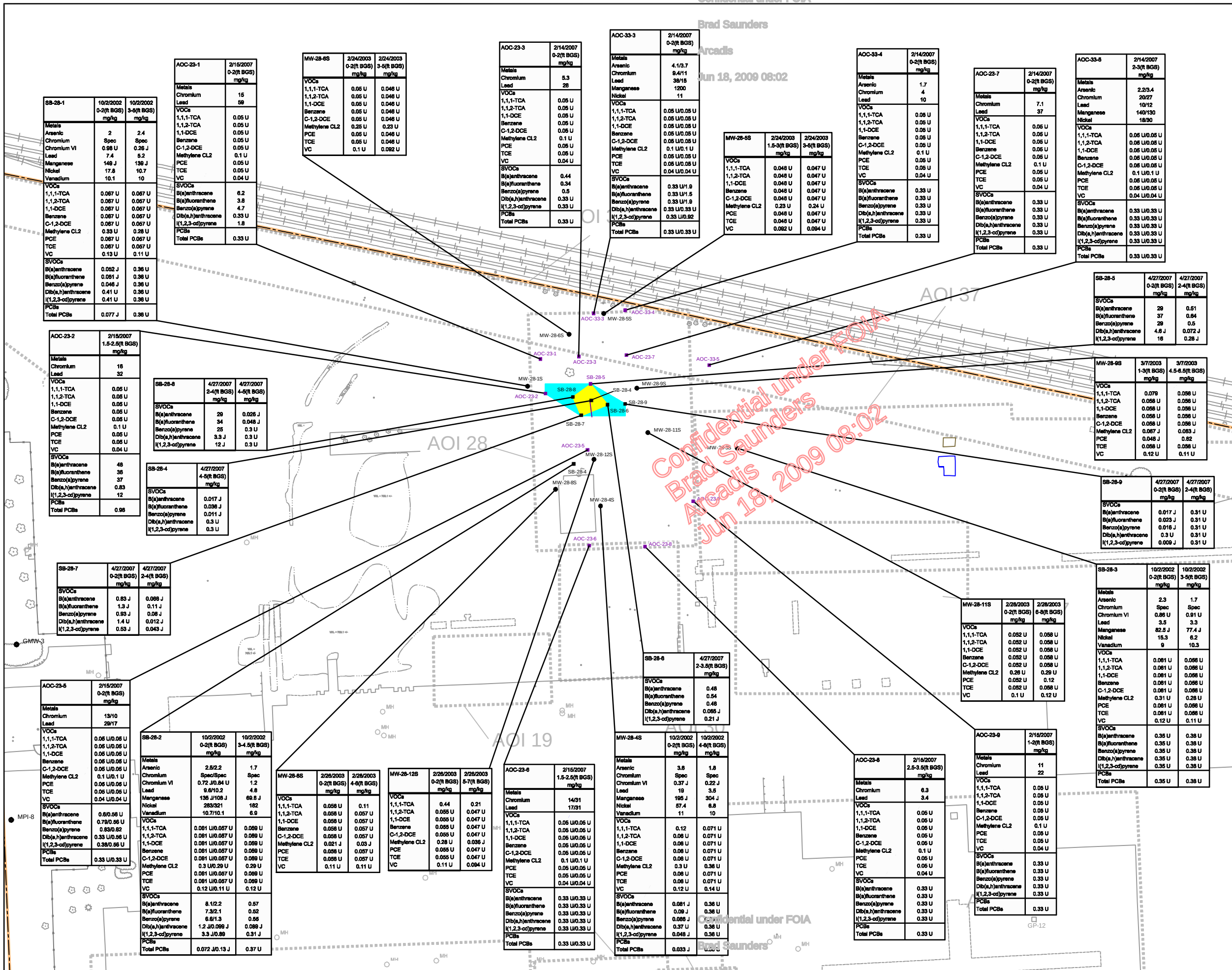


figure 3
EXCAVATION LIMITS
ADDITIONAL INVESTIGATION - AOI 28
13000 ECKLES ROAD
Livonia, Michigan





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TABLE 1

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SAMPLE SUMMARY
GM SUPPLEMENTAL INVESTIGATION
AOI 28 - APRIL 2007
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample Location	Sample ID	Area of Interest	Sample Date	Depth (ft BGS)		Analysis
				Start	End	
SB-28-9	SO-12607-042707-NRS-001	AOI 28	4/27/2007	0	2	SVOCs
SB-28-9	SO-12607-042707-NRS-002	AOI 28	4/27/2007	2	4	SVOCs
SB-28-5	SO-12607-042707-NRS-003	AOI 28	4/27/2007	0	2	SVOCs
SB-28-5	SO-12607-042707-NRS-004	AOI 28	4/27/2007	2	4	SVOCs
SB-28-8	SO-12607-042707-NRS-006	AOI 28	4/27/2007	0	2	SVOCs
SB-28-8	SO-12607-042707-NRS-007	AOI 28	4/27/2007	2	4	SVOCs
SB-28-8	SO-12607-042707-NRS-008	AOI 28	4/27/2007	4	5	SVOCs
SB-28-7	SO-12607-042707-NRS-009	AOI 28	4/27/2007	0	2	SVOCs
SB-28-7	SO-12607-042707-NRS-010	AOI 28	4/27/2007	2	4	SVOCs
SB-28-4	SO-12607-042707-NRS-012	AOI 28	4/27/2007	0	2	SVOCs
SB-28-4	SO-12607-042707-NRS-013	AOI 28	4/27/2007	2	4	SVOCs
SB-28-4	SO-12607-042707-NRS-014	AOI 28	4/27/2007	4	5	SVOCs
SB-28-6	SO-12607-042707-NRS-015	AOI 28	4/27/2007	0	2	SVOCs
SB-28-6	SO-12607-042707-NRS-016	AOI 28	4/27/2007	2	3.5	SVOCs

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TABLE 2

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**ANALYTICAL RESULTS OF SOIL SAMPLES
GM SUPPLEMENTAL INVESTIGATION
AOI 28 - APRIL 2007
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

Area of Interest:	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28	AOI 28
Sample Location:	SB-28-9	SB-28-9	SB-28-5	SB-28-5	SB-28-8	SB-28-8	SB-28-8	SB-28-7	SB-28-7	SB-28-4	SB-28-4	SB-28-4	SB-28-6	SB-28-6
Sample ID (SO-12607-042707-NRS-):	001	002	003	004	006	007	008	009	010	012	013	014	015	016
Sample Date:	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007
Sample Depth:	0-2 ft BGS	2-4 ft BGS	0-2 ft BGS	2-4 ft BGS	0-2 ft BGS	2-4 ft BGS	4-5 ft BGS	0-2 ft BGS	2-4 ft BGS	0-2 ft BGS	2-4 ft BGS	4-5 ft BGS	0-2 ft BGS	2-3.5 ft BGS

Parameter:	Units														
SVOCs															
2-Methylnaphthalene	ug/kg	300 U	310 U	400 J	16 J	3200 J	410 J	300 U	1400 U	300 U	2200 J	2000 J	300 U	1400 J	300 U
Acenaphthene	ug/kg	300 U	310 U	5100 J	120 J	28000 J	2800 J	300 U	100 J	300 U	19000 J	15000 J	300 U	12000 J	35 J
Acenaphthylene	ug/kg	300 U	310 U	15000 U	300 U	120000 U	15000 U	300 U	98 J	300 U	77000 U	41000 U	300 U	40000 U	17 J
Anthracene	ug/kg	300 U	310 U	10000 J	240 J	87000 J	9200 J	10 J	310 J	17 J	65000 J	40000 J	300 U	33000 J	110 J
Benzo(a)anthracene	ug/kg	17 J	310 U	29000	510	290000	23000	23 J	830 J	66 J	190000	110000	17 J	95000	480
Benzo(a)pyrene	ug/kg	16 J	310 U	29000	500	240000	25000	360 U	930 J	80 J	160000	98000	11 J	85000	460
Benzo(b)fluoranthene	ug/kg	23 J	310 U	37000	640	340000	34000	48 J	1300 J	110 J	230000	130000	36 J	110000	540
Benzo(g,h,i)perylene	ug/kg	12 J	310 U	18000	320	130000	13000 J	300 U	600 J	46 J	85000	49000	300 U	47000	240 J
Benzo(k)fluoranthene	ug/kg	8.8 J	310 U	14000 J	230 J	110000 J	12000 J	300 U	520 J	30 J	72000 J	43000	300 U	42000	300
Chrysene	ug/kg	19 J	310 U	28000	510	200000	29000	24 J	930 J	73 J	190000	110000	18 J	92000	520
Dibenz(a,h)anthracene	ug/kg	300 U	310 U	4600 J	72 J	35000 J	3300 J	500 U	1400 U	12 J	23000 J	12000 J	300 U	12000 J	65 J
Fluoranthene	ug/kg	33 J	9.0 J	71000	1300	60000	65000	65 J	1800	140 J	450000	240000	43 J	230000	1100
Fluorene	ug/kg	300 U	310 U	3800 J	100 J	23000 J	2700 J	500 U	130 J	300 U	19000 J	13000 J	300 U	9100 J	34 J
Indeno(1,2,3-cd)pyrene	ug/kg	9.1 J	310 U	16000	280 J	120000	12000	300 U	530 J	43 J	80000	45000	300 U	43000	210 J
Naphthalene	ug/kg	300 U	310 U	1200 J	48 J	8900 J	850 J	300 U	1400 U	300 U	4100 J	4500 J	300 U	2400 J	10 J
Phenanthrene	ug/kg	16 J	310 U	39000	870	280000	29000	43 J	930 J	72 J	210000	130000	28 J	110000	480
Pyrene	ug/kg	25 J	310 U	49000	900	470000	48000	42 J	1700	110 J	330000	190000	25 J	170000	770

Notes:

U - Not present at or above the associated value
J - Estimated concentration

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TABLE 3

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ANALYTICAL RESULTS OF EXCAVATED SOIL SAMPLES
GM SUPPLEMENTAL EXCAVATION - AOI 28
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample Location:	AOC-23-4	SB-28-4	SB-28-4	SB-28-6	SB-28-8
Sample Depth:	(2-3)	(2-4)	(0-2)	(0-2)	(0-2)
Sample ID:	AOC-23-4	SO-12607-042707-NRS-013	SO-12607-042707-NRS-012	SO-12607-042707-NRS-015	SO-12607-042707-NRS-006
Sample Date:	2/15/2007	4/27/2007	4/27/2007	4/27/2007	4/27/2007
Sample Type:					
Parameter:	Units				
VOCs					
1,1,1,2-Tetrachloroethane	ug/kg	50 U	--	--	--
1,1,1-Trichloroethane	ug/kg	50 U	--	--	--
1,1,2,2-Tetrachloroethane	ug/kg	50 U	--	--	--
1,1,2-Trichloroethane	ug/kg	50 U	--	--	--
1,1-Dichloroethane	ug/kg	50 U	--	--	--
1,1-Dichloroethene	ug/kg	50 U	--	--	--
1,2,3-Trichlorobenzene	ug/kg	250 U	--	--	--
1,2,3-Trichloropropane	ug/kg	50 U	--	--	--
1,2,3-Trimethylbenzene	ug/kg	94	--	--	--
1,2,4-Trichlorobenzene	ug/kg	250 U	--	--	--
1,2,4-Trimethylbenzene	ug/kg	91	--	--	--
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	250 U	--	--	--
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	20 U	--	--	--
1,2-Dichlorobenzene	ug/kg	50 U	--	--	--
1,2-Dichloroethane	ug/kg	50 U	--	--	--
1,2-Dichloropropane	ug/kg	50 U	--	--	--
1,3,5-Trimethylbenzene	ug/kg	56	--	--	--
1,3-Dichlorobenzene	ug/kg	50 U	--	--	--
1,4-Dichlorobenzene	ug/kg	50 U	--	--	--
2-Butanone (Methyl Ethyl Ketone)	ug/kg	250 U	--	--	--
2-Hexanone	ug/kg	250 U	--	--	--
2-Methylnaphthalene	ug/kg	330	--	--	--
2-Phenylbutane (sec-Butylbenzene)	ug/kg	50 U	--	--	--
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	250 U	--	--	--
Acetone	ug/kg	750 U	--	--	--
Acrylonitrile	ug/kg	100 U	--	--	--
Benzene	ug/kg	50 U	--	--	--
Bromobenzene	ug/kg	50 U	--	--	--
Bromodichloromethane	ug/kg	50 U	--	--	--
Bromoform	ug/kg	50 U	--	--	--
Bromomethane (Methyl Bromide)	ug/kg	200 U	--	--	--
Carbon disulfide	ug/kg	50 U	--	--	--
Carbon tetrachloride	ug/kg	50 U	--	--	--
Chlorobenzene	ug/kg	50 U	--	--	--
Chlorobromomethane	ug/kg	50 U	--	--	--
Chloroethane	ug/kg	250 U	--	--	--
Chloroform (Trichloromethane)	ug/kg	50 U	--	--	--
Chloromethane (Methyl Chloride)	ug/kg	250 U	--	--	--
cis-1,2-Dichloroethene	ug/kg	50 U	--	--	--
cis-1,3-Dichloropropene	ug/kg	50 U	--	--	--
Cymene (p-Isopropyltoluene)	ug/kg	50 U	--	--	--
Dibromochloromethane	ug/kg	50 U	--	--	--
Dibromomethane	ug/kg	50 U	--	--	--
Dichlorodifluoromethane (CFC-12)	ug/kg	100 U	--	--	--
Diisopropyl ether	ug/kg	250 U	--	--	--
Ethyl Ether	ug/kg	200 U	--	--	--
Ethylbenzene	ug/kg	50 U	--	--	--
Hexachloroethane	ug/kg	100 U	--	--	--
Iodomethane	ug/kg	50 U	--	--	--
Isopropylbenzene	ug/kg	50 U	--	--	--
Methyl Tert Butyl Ether	ug/kg	50 U	--	--	--
Methylene chloride	ug/kg	100 U	--	--	--
Naphthalene	ug/kg	500	--	--	--
n-Butylbenzene	ug/kg	74	--	--	--
n-Propylbenzene	ug/kg	50 U	--	--	--
Styrene	ug/kg	50 U	--	--	--
Tert-Amyl Methyl Ether	ug/kg	250 U	--	--	--
Tert-Butyl Alcohol	ug/kg	2500 U	--	--	--
Tert-Butyl Ethyl Ether	ug/kg	250 U	--	--	--
tert-Butylbenzene	ug/kg	250 U	--	--	--
Tetrachloroethene	ug/kg	50 U	--	--	--
Tetrahydrofuran	ug/kg	250 U	--	--	--
Toluene	ug/kg	50 U	--	--	--
trans-1,2-Dichloroethene	ug/kg	50 U	--	--	--
trans-1,3-Dichloropropene	ug/kg	50 U	--	--	--
trans-1,4-Dichloro-2-butene	ug/kg	50 U	--	--	--
Trichloroethene	ug/kg	50 U	--	--	--
Trichlorofluoromethane (CFC-11)	ug/kg	50 U	--	--	--
Vinyl chloride	ug/kg	40 U	--	--	--
Xylene (total)	ug/kg	150 U	--	--	--
SVOCs					
1,2-Diphenylhydrazine	ug/kg	1160 U	--	--	--
2,2'-oxybis(1-Chloropropane)	ug/kg	1160 U	--	--	--
2,4,5-Trichlorophenol	ug/kg	1160 U	--	--	--
2,4,6-Trichlorophenol	ug/kg	1160 U	--	--	--
2,4-Dichlorophenol	ug/kg	1160 U	--	--	--
2,4-Dimethylphenol	ug/kg	1160 U	--	--	--
2,4-Dinitrophenol	ug/kg	2910 U	--	--	--
2,4-Dinitrotoluene	ug/kg	1160 U	--	--	--
2,6-Dichlorophenol	ug/kg	1160 U	--	--	--
2,6-Dinitrotoluene	ug/kg	1160 U	--	--	--
2-Chloronaphthalene	ug/kg	1160 U	--	--	--

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TABLE 3

ANALYTICAL RESULTS OF EXCAVATED SOIL SAMPLES
GM SUPPLEMENTAL EXCAVATION - AOI 28
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample Location: Sample Depth: Sample ID: Sample Date: Sample Type: Parameter:	Units	AOC-23-4 (2-3) AOC-23-4 2/15/2007	SB-28-4 (2-4) SO-12607-042707-NRS-013 4/27/2007	SB-28-4 (0-2) SO-12607-042707-NRS-012 4/27/2007	SB-28-6 (0-2) SO-12607-042707-NRS-015 4/27/2007	SB-28-8 (0-2) SO-12607-042707-NRS-006 4/27/2007
2-Chlorophenol	ug/kg	1160 U	--	--	--	--
2-Methylnaphthalene	ug/kg	1500	2000 J	2200 J	1400 J	3200 J
2-Methylphenol	ug/kg	1160 U	--	--	--	--
2-Nitroaniline	ug/kg	2910 U	--	--	--	--
2-Nitrophenol	ug/kg	1160 U	--	--	--	--
3&4-Methylphenol	ug/kg	1160 U	--	--	--	--
3-Nitroaniline	ug/kg	2910 U	--	--	--	--
4,6-Dinitro-2-methylphenol	ug/kg	2910 U	--	--	--	--
4-Bromophenyl phenyl ether	ug/kg	1160 U	--	--	--	--
4-Chloro-3-methylphenol	ug/kg	980 U	--	--	--	--
4-Chloroaniline	ug/kg	1160 U	--	--	--	--
4-Chlorophenyl phenyl ether	ug/kg	1160 U	--	--	--	--
4-Nitroaniline	ug/kg	2910 U	--	--	--	--
4-Nitrophenol	ug/kg	2910 U	--	--	--	--
Acenaphthene	ug/kg	12000	15000 J	19000 J	12000 J	28000 J
Acenaphthylene	ug/kg	1160 U	41000 U	77000 U	40000 U	120000 U
Anthracene	ug/kg	46000	40000 J	65000 J	33000 J	87000 J
Benzo(a)anthracene	ug/kg	150000	110000	190000	95000	290000
Benzo(a)pyrene	ug/kg	110000	98000	160000	85000	240000
Benzo(b)fluoranthene	ug/kg	110000	130000	230000	110000	340000
Benzo(g,h,i)perylene	ug/kg	33000	49000	85000	47000	130000
Benzo(k)fluoranthene	ug/kg	98000	43000	72000 J	42000	110000 J
Benzoic acid	ug/kg	11550 U	--	--	--	--
Benzyl Alcohol	ug/kg	1160 U	--	--	--	--
bis(2-Chloroethoxy)methane	ug/kg	1160 U	--	--	--	--
bis(2-Chloroethyl)ether	ug/kg	350 U	--	--	--	--
bis(2-Ethylhexyl)phthalate	ug/kg	5000	--	--	--	--
Butyl benzylphthalate	ug/kg	1160 U	--	--	--	--
Carbazole	ug/kg	22000	--	--	--	--
Chrysene	ug/kg	160000	110000	190000	92000	290000
Dibenz(a,h)anthracene	ug/kg	3000	12000 J	23000 J	12000 J	35000 J
Dibenzofuran	ug/kg	5900	--	--	--	--
Diethyl phthalate	ug/kg	1160 U	--	--	--	--
Dimethyl phthalate	ug/kg	1160 U	--	--	--	--
Di-n-butylphthalate	ug/kg	1160 U	--	--	--	--
Di-n-octyl phthalate	ug/kg	1160 U	--	--	--	--
Fluoranthene	ug/kg	400000	240000	450000	230000	660000
Fluorene	ug/kg	12000	13000	19000 J	9100 J	25000 J
Hexachlorobenzene	ug/kg	1160 U	--	--	--	--
Hexachlorobutadiene	ug/kg	1160 U	--	--	--	--
Hexachlorocyclopentadiene	ug/kg	700 U	--	--	--	--
Hexachloroethane	ug/kg	1050 U	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/kg	37000	45000	80000	43000	120000
Isophorone	ug/kg	1160 U	--	--	--	--
Naphthalene	ug/kg	--	4500 J	4100 J	2400 J	6900 J
Nitrobenzene	ug/kg	700 U	--	--	--	--
N-Nitrosodimethylamine	ug/kg	1160 U	--	--	--	--
N-Nitrosodi-n-propylamine	ug/kg	1160 U	--	--	--	--
N-Nitrosodiphenylamine	ug/kg	1160 U	--	--	--	--
Pentachlorophenol	ug/kg	2800 U	--	--	--	--
Phenanthrene	ug/kg	180000	130000	210000	110000	280000
Phenol	ug/kg	1160 U	--	--	--	--
Pyrene	ug/kg	450000	190000	330000	170000	470000
Metals						
Cadmium	ug/kg	1600	--	--	--	--
Chromium Total	ug/kg	54000	--	--	--	--
Lead	ug/kg	98000	--	--	--	--
PCBs						
Aroclor-1016 (PCB-1016)	ug/kg	330 U	--	--	--	--
Aroclor-1221 (PCB-1221)	ug/kg	330 U	--	--	--	--
Aroclor-1232 (PCB-1232)	ug/kg	330 U	--	--	--	--
Aroclor-1242 (PCB-1242)	ug/kg	330 U	--	--	--	--
Aroclor-1248 (PCB-1248)	ug/kg	1100	--	--	--	--
Aroclor-1254 (PCB-1254)	ug/kg	330 U	--	--	--	--
Aroclor-1260 (PCB-1260)	ug/kg	2300	--	--	--	--
Aroclor-1262 (PCB-1262)	ug/kg	330 U	--	--	--	--
Aroclor-1268 (PCB-1268)	ug/kg	330 U	--	--	--	--
Total PCBs	ug/kg	3400	--	--	--	--

Notes:

U - Not present at or above the associated value

J - Estimated concentration

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TABLE 4

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EXCAVATION LIMITS
GM SUPPLEMENTAL EXCAVATION
AOI 28
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Excavation Location	Easting Coordinates (X)	Northing Coordinates (Y)	Excavation Depth (ft BGS)
EXC-1	13377075.07	321777.92	2
EXC-2	13377151.81	321778.35	4
EXC-3	13377210.73	321744.19	2
EXC-4	13377210.77	321724.13	2
EXC-5	13377180.83	321742.59	4
EXC-6	13377135.56	321723.94	4
EXC-7	13377121.84	321756.15	4
EXC-8	13377074.84	321761.8	2

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ATTACHMENT A

DATA VALIDATION MEMORANDUM

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**CONESTOGA-ROVERS
& ASSOCIATES**

Arcadis

45 Farmington Valley Drive
Plainville, Connecticut 06062
Telephone: (860) 747-1800
www.CRAworld.com

Fax: (860) 747-1900

MEMORANDUM

TO: Chris Meincke REF. NO.: 12607

FROM: Kathy Shaw/lo/1/CT DATE: June 18, 2007

RE: Data Quality Assessment and Validation – Full Validation SSOW: 12650-007017
AOI 28 ASTI Delineation
13000 Eckles Road Site – Livonia, Michigan

The following details a quality assessment and validation of the analytical data resulting from the April 27, 2007 collection of 14 soil samples from the 13000 Eckles Road Site in Livonia, Michigan. The sample summary detailing sample identification, sample location, and analytical parameters is presented in Table 1. Sample analysis was completed at Severn Trent Laboratories in North Canton, Ohio (STL) in accordance with the methodologies presented in Table 2.

The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP). Application of quality assurance criteria was consistent with following guidance documents:

- i. "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999.

These guidelines are collectively referred to as "NFGs" in this Memorandum.

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CRA MEMORANDUM

The following elements are addressed in this memorandum with qualification if necessary in the identified tables:

	Data Review Element	Qualification Table
1	Sample Quantitation	NA
2	Sample Preservation and Holding Times	NA
3	Gas Chromatography/Mass Spectrometer (GC/MS) - Tuning and Mass Calibration (Instrument Performance Check) - Organic Analyses	NA
4	Initial Calibration - Organic Analyses	NA
5	Continuing Calibration - Organic Analyses	NA
6	Method Blank Samples	NA
7	Surrogate Compounds - Organic Analyses	NA
8	Matrix Spike/Matrix Spike Duplicate Analyses	NA
9	Laboratory Control Sample Analysis/Laboratory Control Duplicate	NA
10	Internal Standard Summaries - Organic Analyses	NA
11	Target Compound Identification	NA
12	Target Compound Quantitation	NA
13	Field Quality Assurance/Quality Control	NA
14	System Performance	NA

Sample Quantitation

The laboratory reported detected concentrations of volatile polycyclic aromatic hydrocarbons (PAH) below the laboratory's report limit (RL) but above the laboratory's method detection limit (MDL). The laboratory flagged these sample concentrations with a "J", these concentrations should be qualified as estimated (J) values unless qualified otherwise in this memorandum.

Sample Preservation and Holding Times

Sample holding time periods and preservation requirements are presented in Table 2.

The samples were prepared and/or analyzed within the specified holding time periods.

The samples were shipped and maintained in accordance with the sample preservation requirements.

CRA MEMORANDUM

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Gas Chromatography/Mass Spectrometer (GC/MS) – Tuning and Mass Calibration (Instrument Performance Check) – Organic Analyses

To ensure adequate mass resolution, identification, and to some degree, sensitivity; the performance of each GC/MS instrument used for PAH analysis was checked at the beginning of each 12-hour period using decafluorotriphenylphosphine (DFTPP). The resulting spectra must meet the criteria cited in the NFGs before initiating an analysis sequence.

The tuning compound was analyzed at the required frequency throughout the PAH analysis. The results of all instrument performance checks were within the acceptance criteria, indicating acceptable instrument performance.

Initial Calibration – Organic Analyses

Initial calibration data are used to demonstrate that each instrument is capable of generating acceptable quantitative data. A five point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each over a specific concentration range.

Initial calibration criteria for organic analyses are evaluated against the following criteria:

- i. GC/MS (all compounds) – must meet a minimum mean relative response factor (RRF) of 0.05 ; and
- ii. GC/MS (all compounds) – the percent relative standard deviation (RSD) values must not exceed 30.0 percent or a minimum coefficient of determination of 0.99 if quadratic equation calibration curves are used.

Calibration standards were analyzed at the required frequency and the results met the above criteria for linearity and sensitivity.

Continuing Calibration – Organic Analyses

To ensure that each instrument was capable of producing acceptable quantitative data over the analysis period, continuing calibration standards must be analyzed every 12 hours for GC/MS analyses and every 10 samples by GC. The following criteria are employed to evaluate the continuing calibration data:

- i. GC/MS (all compounds) – must meet a minimum mean RRF of 0.05 ;
- ii. GC/MS (all compounds) – the percent difference between the mean initial calibration RRF and the continuing calibration RRF must not exceed 25 percent; and
- iii. GC/MS (compounds determined by quadratic curve) – the percent drift between the true value and the continuing calibration value must not exceed 25 percent.

Calibration standards were analyzed at the required frequency and the results met the above criteria for instrument sensitivity and linearity of response and sensitivity.

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Method Blank Samples

Method blank samples are prepared from a purified sample matrix and are processed concurrently with investigative samples to assess the presence and the magnitude of sample contamination introduced during sample analysis. Method blank samples are analyzed at a minimum frequency of one per analytical batch and target analytes should be non-detect. The method blank samples were reported to be free from detectable levels of target analytes, indicating no laboratory-attributable contamination occurred.

Surrogate Compounds – Organic Analyses

Individual sample performance for organic analyses was monitored by assessing the results of surrogate compound percent recoveries. Surrogate percent recoveries are reviewed against the laboratory developed control limits provided in the analytical report. The PAH surrogate recoveries could not be measured or evaluated in several samples due to dilutions required to successfully analyze the samples. No qualification of these samples was required. The surrogate recovery acceptance criteria were met for all remaining samples.

Matrix Spike/Matrix Spike Duplicate Analyses

To assess the long term accuracy and precision of the analytical methods on various matrices, matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and the relative percent difference (RPD) of the concentrations were determined. The organic MS/MSD percent recovery and RPD control limits are established by the laboratory. The MS/MSD percent recoveries and associated RPD acceptance criteria were met.

Laboratory Control Sample/Laboratory Control Duplicate Analysis

The laboratory control sample and laboratory control duplicate (LCS/LCD) analyses serve as a monitor of the overall performance in all steps of the sample analysis and are analyzed with each sample batch. The LCS/LCD percent recoveries were evaluated against method and laboratory established control limits. The LCS/LCD percent recoveries were within the laboratory control limits or did not warrant qualification, indicating that an acceptable level of overall performance was achieved.

Laboratory precision was verified by the relative percent difference (RPD) of the LCS/LCD when a matrix spike/matrix spike duplicate was not analyzed. The RPDs were within the laboratory control limits, indicating that an acceptable level of overall laboratory precision was achieved.

Internal Standard Summaries – Organic Analyses

To correct for variability in the GC/MS response and sensitivity, internal standard (IS) compounds are added to all samples. All results are calculated as a ratio of the compound and associated IS response. Overall instrument stability and performance for PAH analysis was monitored using IS peak area and retention time (RT) data. The IS peak areas and RTs of the samples are required to meet the following criteria:

- i. IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated continuing calibration standard IS area counts; and

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Internal Standard Summaries – Organic Analyses (Cont'd)

- ii. the RT of the IS must not vary by more than plus or minus 30 seconds from the associated continuing calibration standard.

A review of the PAH internal standard data showed that the IS area counts and retention time data were within the acceptance criteria.

Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra (if applicable) were evaluated according to identification criteria established by the methods. The organic compounds reported adhered to the specified identification criteria.

Target Compound Quantitation

The reported quantitation results and detection limits were checked to ensure results reported were accurate. No discrepancies were found between the raw data and the sample results reported by the laboratory.

System Performance

System performance between various quality control checks was evaluated to monitor for changes that may have caused the degradation of data quality. No technical problems or chromatographic anomalies were observed which would require qualification of the data.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision based on the provided information and may be used with the qualifications noted.

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TABLE 1

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SAMPLE COLLECTION AND ANALYSIS SUMMARY
 AOI 28 ASTI DELINEATION
 13000 ECKLES ROAD SITE
 LIVONIA, MICHIGAN

Parameter

<i>Sample Identification</i>	<i>Sample Location</i>	<i>Matrix</i>	<i>PAH</i>
SO-12607-042707-NRS-001	SB-28-9	Soil	X
SO-12607-042707-NRS-002	SB-28-9	Soil	X
SO-12607-042707-NRS-003	SB-28-5	Soil	X
SO-12607-042707-NRS-004	SB-28-5	Soil	X
SO-12607-042707-NRS-006	SB-28-8	Soil	X
SO-12607-042707-NRS-007	SB-28-8	Soil	X
SO-12607-042707-NRS-008	SB-28-8	Soil	X
SO-12607-042707-NRS-009	SB-28-7	Soil	X
SO-12607-042707-NRS-010	SB-28-7	Soil	X
SO-12607-042707-NRS-012	SB-28-4	Soil	X
SO-12607-042707-NRS-013	SB-28-4	Soil	X
SO-12607-042707-NRS-014	SB-28-4	Soil	X
SO-12607-042707-NRS-015	SB-28-6	Soil	X
SO-12607-042707-NRS-016	SB-28-6	Soil	X

 PAH - Polycyclic Aromatic Hydrocarbons

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TABLE 2

SUMMARY OF ANALYTICAL METHODS, HOLDING TIME PERIODS, AND PRESERVATIVES
 AOI 28 ASTI DELINEATION
 13000 ECKLES ROAD SITE
 LIVONIA, MICHIGAN

<i>Parameter</i>	<i>Method</i>	<i>Matrix</i>	<i>Holding Time</i>	<i>Preservation</i>
PAH	SW-846 8270C	Soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis	Iced, 4 ± 2° C

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SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, 3rd Edition, and Promulgated updates, November 1986

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ATTACHMENT B

WASTE MANIFESTS

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TABLE B.1

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SUMMARY OF NON-HAZARDOUS WASTE SHIPMENTS
AOI 28 ADDITIONAL EXCAVATION ACTIVITIES
13000 ECKLES ROAD
LIVONIA, MICHIGAN

Date	Manifest No.	Est. Volume (yds)	Trucking Co.	Weigh Ticket Volume (Tons)
6/13/2007	191572	40	Farmer & Underwood	42.2
6/13/2007	191573	40	Farmer & Underwood	48.55
6/13/2007	191574	40	Farmer & Underwood	52.97
6/13/2007	191575	40	Farmer & Underwood	59.04
6/13/2007	191576	40	Farmer & Underwood	50.58
6/13/2007	191577	40	Farmer & Underwood	49.3
6/13/2007	191578	40	Farmer & Underwood	47.67
6/13/2007	191579	40	Farmer & Underwood	48.02
6/13/2007	191580	40	Farmer & Underwood	48.32
6/13/2007	191581	40	Farmer & Underwood	47.99
6/13/2007	191582	40	Farmer & Underwood	43.77
6/13/2007	191583	40	Farmer & Underwood	40.81
6/13/2007	191584	40	Farmer & Underwood	48.66
6/13/2007	191586	40	Farmer & Underwood	51.58
6/13/2007	191587	40	Farmer & Underwood	47.23
6/13/2007	191588	40	Farmer & Underwood	45.13
6/14/2007	191589	40	Farmer & Underwood	47.41
6/14/2007	191590	40	Farmer & Underwood	46.46
6/14/2007	191591	40	Farmer & Underwood	43.94
6/14/2007	191592	40	Farmer & Underwood	42.11
6/14/2007	191593	40	Farmer & Underwood	44.44
Total (Tons):				996.18

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191586

GENERATOR:

General Motors Corporation

USEPA ID No M1D005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Former UnderwoodVehicle No.: 176Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☒ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3082	Non Haz Soil	SOLID	Gross Wt.
			Tare Wt.
			Net Wt.
			Yardage:

Generator Signature: William D. BinghamDate: 6-13-07Transporter Signature: [Signature]Date: 6-13Destination Signature: [Signature]Date: 6-13

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191581

GENERATOR:

General Motors Corporation

USEPA ID No MID00535662)

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 176

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3007	non H92 SOLID	Solid	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: [Signature] Date: 6-13-07Transporter Signature: [Signature] Date: 6-15Destination Signature: [Signature] Date: 6-13

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191576

GENERATOR:

General Motors Corporation

USEPA ID No M1D005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 176

Box No.: _____

DELIVER TO:

☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	non Hqz soil	solid	
			Gross Wt.:
			Tare Wt.:
			Net Wt.:
			Yardage:

Generator Signature: _____

Date: 6-13-07

Transporter Signature: _____

Date: 6-13

Destination Signature: _____

Date: 6-13

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191592

GENERATOR:

General Motors Corporation

USEPA ID NO MID 005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 173

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	Non H92 SOL		Gross Wt.: Tare Wt.: Net Wt.: Yardage: 40 CY

Generator Signature: Jim Decker-Billing Date: 6-14-07Transporter Signature: [Signature] Date: 6-14-07Destination Signature: 175355 Date: 6-14-07

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191591

GENERATOR:

General Motors Corporation

USEPA ID No MID 005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 173

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	Non HAZ SOIL		Gross Wt.: Tare Wt.: Net Wt.: Yardage: 40 CY

Generator Signature: *[Signature]*

Date: 6-18-07

Transporter Signature: *[Signature]*

Date: 6-19-07

Destination Signature: *[Signature]*

Date:

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191590

GENERATOR:

General Motors Corporation

USEPA ID NO MID005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 173

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☒ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3082	Non Hqz Soil	SOLID	40Y
			Gross Wt.:
			Tare Wt.:
			Net Wt.:
			Yardage:
			40CY

Generator Signature: *[Signature]*

Date: 6-15-07

Transporter Signature: *[Signature]*

Date: 6-14-07

Destination Signature: *[Signature]*

Date:

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191589

GENERATOR:

General Motors Corporation

USEPA ID No M10005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 173

Box No.: 1

DELIVER TO:

☐ Autumn Hills RDF (Zeeland, MI)☐ Waters Landfill (Frederic, MI)☐ Eagle Valley RDF (Orion, MI)☐ Glen's Sanitary Landfill (Maple City, MI)☐ Hastings Sanitary Services (Hastings, MI)☐ McGill Road Landfill (Jackson, MI)☐ Northern Oaks RDF (Harrison, MI)☐ Pine Tree Acres, Inc. (Lenox, MI)☐ People's Landfill, Inc. (Birch Run, MI)☐ Tri-City RDF (Carsonville, MI)☐ Venice Park RDF (Lennon, MI)☐ Westside RDF (Three Rivers, MI)☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	non haz soil	solid	40Y
			Gross Wt.:
			Tare Wt.:
			Net Wt.:
			Yardage:
			40cy

Generator Signature: [Signature] Date: 6-14-07Transporter Signature: [Signature] Date: 6-14-07Destination Signature: [Signature] Date: 6-14-07

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191583

GENERATOR:

General Motors Corporation

USEPA ID NO MID005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 173

Box No.: —

DELIVER TO:

☐ Autumn Hills RDF (Zeeland, MI)☐ Waters Landfill (Frederic, MI)☐ Eagle Valley RDF (Orion, MI)☐ Glen's Sanitary Landfill (Maple City, MI)☐ Hastings Sanitary Services (Hastings, MI)☐ McGill Road Landfill (Jackson, MI)☐ Northern Oaks RDF (Harrison, MI)☐ Pine Tree Acres, Inc. (Lenox, MI)☐ People's Landfill, Inc. (Birch Run, MI)☐ Tri-City RDF (Carsonville, MI)☐ Venice Park RDF (Lennon, MI)☐ Westside RDF (Three Rivers, MI)☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	non hqz soil	solid	Gross Wt.:
			Tare Wt.:
			Net Wt.:
			Yardage:

Generator Signature:

Date:

6-13-07

Transporter Signature:

Date:

6-13-07

Destination Signature:

Date:

6/13/07

40-81 Tms

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Jun 18, 2009 08:02

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191580

GENERATOR:

General Motors Corporation

USEPA ID No M10005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 173

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	non Hqz soil	Solid	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: [Signature] Date: 6-13-07Transporter Signature: [Signature] Date: 6-13-07Destination Signature: [Signature] Date: 6-13-07

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Jun 18, 2009 08:02

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191577

GENERATOR:

General Motors Corporation
 USEPA ID No MID005356621
 13000 Eckles Road
 Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 173

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDE (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	NON HAZ SOIL	Solid	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: [Signature] Date: 6-13-07Transporter Signature: [Signature] Date: 6-13-07Destination Signature: [Signature] Date: _____

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Jun 18, 2009 08:02

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191572

GENERATOR:

General Motors Corp

USEPA ID NO. MID 005 356 621

13000 Eckles Road

Livonia, MI 48150

Transporter: Furrer UnderwoodVehicle No.: 173

Box No.: _____

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges: _____

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	non HAZ SOLID		Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: [Signature] Date: 6-13-07Transporter Signature: [Signature] Date: 6-13-07Destination Signature: [Signature] Date: _____

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Jun 18, 2009 08:02

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191573

GENERATOR:

General Motors Corp

USEPA ID NO. M10005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer & Underwood

Vehicle No.: 149

Box No.:

DELIVER TO:

☐ Autumn Hills RDF (Zeeland, MI)☐ Waters Landfill (Frederic, MI)☐ Eagle Valley RDF (Orion, MI)☐ Glen's Sanitary Landfill (Maple City, MI)☐ Hastings Sanitary Services (Hastings, MI)☐ McGill Road Landfill (Jackson, MI)☐ Northern Oaks RDF (Harrison, MI)☐ Pine Tree Acres, Inc. (Lenox, MI)☐ People's Landfill, Inc. (Birch Run, MI)☐ Tri-City RDF (Carsonville, MI)☐ Venice Park RDF (Lennon, MI)☐ Westside RDF (Three Rivers, MI)☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	non HAZ SOLID	solid	
			Gross Wt.:
			Tare Wt.:
			Net Wt.:
			Yardage:

Generator Signature:

Date:

6-13-07

Transporter Signature:

Date:

6-13-07

Destination Signature:

Date:

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Jun 18, 2009 08:02

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NON-HAZARDOUS WASTE MANIFEST

NO. 191574

Jun 18, 2009 08:02

GENERATOR:

General Motors CorporationUSEPA ID NO MID005356 62113000 Eckles RoadLivonia, MI 48150Transporter: Farmer UnderwoodVehicle No.: 173Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	NON HAZ SOIL	SOLID	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: [Signature]Date: 6-13-07Transporter Signature: [Signature]Date: 6-13-07Destination Signature: [Signature]Date: —

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191575

GENERATOR:

General Motors Corporation

USEPA ID No M10005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 149

Box No.: _____

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☒ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	NON HAZ SOLID	Solid	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: Tom Williams Date: 6-13-07Transporter Signature: H. Swan Date: 6-13-07

Destination Signature: _____ Date: _____

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Jun 18, 2009 08:02

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191578

GENERATOR:

General Motors Corporation

USEPA ID No M1D005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 149

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	NON HAZ SOLID	SD lid	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: [Signature] Date: 6-13-07Transporter Signature: [Signature] Date: 6-13-07Destination Signature: [Signature] Date: 6-13-07

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NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191579

GENERATOR:

General Motors Corporation

USEPA ID No M1D005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 149

Box No.: —

DELIVER TO:

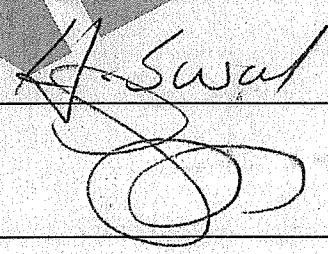
- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

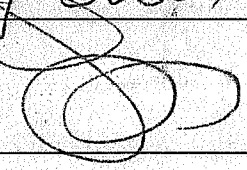
Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	NON HAZ SOIL	Solid	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: 

Date: 6-13-07

Transporter Signature: 

Date: 6-13-07

Destination Signature: 

Date: 6/13/07

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Jun 18, 2009 08:02

Brad Saunders

NON-HAZARDOUS WASTE MANIFEST

Jun 18, 2009 08:02

NO. 191582

GENERATOR:

General Motors Corporation

USEPA ID No M10005356621

13000 Eckles Road

Livonia, MI 48150

Transporter: Farmer Underwood

Vehicle No.: 149

Box No.: —

DELIVER TO:

- ☐ Autumn Hills RDF (Zeeland, MI)
☐ Waters Landfill (Frederic, MI)
☐ Eagle Valley RDF (Orion, MI)
☐ Glen's Sanitary Landfill (Maple City, MI)
☐ Hastings Sanitary Services (Hastings, MI)
☐ McGill Road Landfill (Jackson, MI)
☐ Northern Oaks RDF (Harrison, MI)
☐ Pine Tree Acres, Inc. (Lenox, MI)
☐ People's Landfill, Inc. (Birch Run, MI)
☐ Tri-City RDF (Carsonville, MI)
☐ Venice Park RDF (Lennon, MI)
☐ Westside RDF (Three Rivers, MI)
☒ Woodland Meadows RDF (Van Buren, MI)

Company Responsible for Disposal Charges:

Approval No.	Name of Waste Stream	Physical Description (i.e., solid, color)	Volume
15-3087	NON HAZ SOIL	Solid	Gross Wt.: Tare Wt.: Net Wt.: Yardage:

Generator Signature: Wm D. Bellinger Date: 6-13-07Transporter Signature: A. Swand Date: 6-13-07Destination Signature: [Signature] Date: 6/13/07

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ATTACHMENT C

BORROW SOURCE DOCUMENTATION

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8800 DIX AVE., DETROIT, MICHIGAN 48209, (313) 429-5389

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Jun 18, 2009 08:02

June 11th, 2007

Mr. Darwin Loyer
Inland Waters Pollution Control
2021 S. Schaeffer Hwy.
Detroit, MI 48217

Dear Darwin,

The Edw. C. Levy Co. is proud to be a supplier of quality aggregates to the construction industry. Thank you for your request for information about our products and I trust the following information will meet your requirement.

The Class II Natural Sand from our American Aggregate – Buno Road Plant (State Pit No. 47-16), is a virgin aggregate material, being both mined and processed on site at the Buno Road location. Additionally, this material currently satisfies all the specification requirements for Class II Granular Material outlined in the MDOT 2003 Standard Specification for Construction – Section 902 “Aggregates”.

If I can be of any further assistance to you, please contact me directly.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'Tony Johnson', is written over a horizontal line.

Tony Johnson
Product Application Engineer

cc: Customer File

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Jun 18, 2009 08:02

ATTACHMENT D

HIGH-END ESTIMATES OF CUMULATIVE CANCER RISK AND HI
FOR ROUTINE WORKER EXPOSURE TO SOIL VIA DIRECT CONTACT AT AOI 28

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Jun 18, 2009 08:02

**Attachment D: High-End Estimates of Cancer Risk and HQ for Routine Worker Exposure to Soil via Direct Contact at AOI 28
General Motors Corporation - 13000 Eckles Road, Livonia, Michigan**

Chem Group	Chemical	CASRN	Carc Class	Analized	Detected	Soil Conc ⁶ (mg/kg)	MDEQ Backgrd (mg/kg)	RBC TR=10 ⁻⁵ (mg/kg)	RBC HQ=1 (mg/kg)	Cancer Risk	HQ
VOC	1,1-Dichloroethane	75-34-3	SC	31	1	4.30E-02			8.00E+02		5.4E-05
VOC	Methyl Acetate	79-20-9		20	4	3.60E-02			1.43E+05		2.5E-07
VOC	Methylcyclohexane	108-87-2		20	1	1.00E-02			2.11E+03		4.8E-06
VOC	Methylene Chloride	75-09-2	B2	31	5	6.70E-02		1.01E+02	4.96E+03	6.6E-09	1.4E-05
VOC	Tetrachloroethene	127-18-4	C-B2	31	3	8.20E-01		1.46E+01	6.26E+02	5.6E-07	1.3E-03
VOC	Toluene	108-88-3	ID	31	1	1.60E-02			9.97E+02		1.6E-05
VOC	1,1,1-Trichloroethane	71-55-6	D	31	5	4.40E-01			3.09E+03		1.4E-04
VOC	Xylenes (total)	1330-20-7	ID	31	1	2.70E-02			3.65E+02		7.4E-05
SVOC	Acenaphthene	83-32-9		29	10	5.40E+00			1.74E+04		3.1E-04
SVOC	Acenaphthylene	208-96-8	D	29	2	9.80E-02			8.39E+03		1.2E-05
SVOC	Anthracene	120-12-7	D	29	12	1.90E+01			2.26E+05		8.4E-05
SVOC	Benzo(a)anthracene	56-55-3	B2	21	14	1.25E+01		2.79E+01		4.5E-06	
SVOC	Benzo(a)pyrene	50-32-8	B2	21	14	1.02E+01		2.87E+00		3.6E-05	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	21	14	1.22E+01		2.68E+01		4.6E-06	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	29	14	1.80E+01			2.25E+04		8.0E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	29	15	3.00E+01		2.86E+02		1.0E-06	
SVOC	Biphenyl	92-52-4	D	8	1	5.80E-01			4.40E+04		1.3E-05
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	19	2	5.30E-01		1.76E+03	1.76E+04	3.0E-09	3.0E-05
SVOC	Carbazole	86-74-8	B2	19	5	7.30E+00		1.12E+03		6.5E-08	
SVOC	Chrysene	218-01-9	B2	29	18	5.20E+01		2.56E+03		2.0E-07	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	21	6	1.18E+00		2.88E+00		4.1E-06	
SVOC	Dibenzofuran	132-64-9	D	19	3	2.50E+00			1.31E+03		1.9E-03
SVOC	Fluoranthene	206-44-0	D	29	22	1.40E+02			2.70E+04		5.2E-03
SVOC	Fluorene	86-73-7	D	29	9	5.20E+00			1.79E+04		2.9E-04
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	29	14	1.60E+01		2.88E+01		5.5E-06	
SVOC	2-Methylnaphthalene	91-57-6	ID	29	5	1.10E-01			1.31E+02		3.1E-03
SVOC	Naphthalene	91-20-3	C	29	5	1.20E+00			1.03E+02		1.2E-02
SVOC	Phenanthrene	85-01-8	D	29	18	6.80E+01			1.62E+04		4.3E-03
SVOC	Pyrene	129-00-0	D	29	21	1.60E+02			2.07E+04		7.7E-03
PCB	PCBs (total)	1336-36-3	B2	19	4	9.60E-01		7.15E+00	1.44E+01	1.3E-06	6.7E-02
INORG	Arsenic	7440-38-2	A	11	11	3.90E+00	5.8E+00	2.72E+01	4.39E+02		
INORG	Barium	7440-39-3	NC	11	11	1.20E+02	7.5E+01		1.43E+05		3.1E-04
INORG	Cadmium	7440-43-9	B1	19	19	3.10E+00	1.2E+00	1.86E+04	1.33E+03	1.0E-09	1.4E-03
INORG	Chromium III	16065-83-1	D	8	8	2.68E+01	1.8E+01		3.06E+06		2.9E-06
INORG	Chromium VI	18540-29-9	A	19	16	2.35E+01		2.79E+03	5.83E+03	8.4E-08	4.0E-03
INORG	Cobalt	7440-48-4	B1	8	8	3.10E+00	6.8E+00	1.20E+04	1.51E+04		
INORG	Copper	7440-50-8	D	11	11	3.15E+01	3.2E+01		8.17E+04		
INORG	Lead	7439-92-1	B2	19	19	5.90E+01	2.1E+01				
INORG	Manganese	7439-96-5	D	10	10	1.20E+03	4.4E+02		4.95E+04		1.5E-02
INORG	Mercury	7439-97-6	D	11	4	2.90E-02	1.3E-01		5.36E+01		
INORG	Nickel	7440-02-0	A	10	10	3.02E+02	2.0E+01	1.40E+05	4.09E+04	2.0E-08	6.9E-03
INORG	Selenium	7782-49-2	D	11	6	2.75E+00	4.1E-01		1.02E+04		2.3E-04
INORG	Vanadium	7440-62-2		8	8	1.10E+01			1.43E+04		7.7E-04
INORG	Zinc	7440-66-6	ID	11	11	1.36E+02	4.7E+01		6.13E+05		1.5E-04
Sum:										6E-05	0.1

Notes:

1	Only detected chemicals are shown.
2	This evaluation is based on all soil data collected at AOI 28 through April 2007, except for AOC-23-4 (0-3 ft), SB-28-4 (0-4 ft), SB-28-6 (0-2 ft), and SB-28-8 (0-2 ft) which have been excavated during the AOI 28 investigation.
3	Cancer risk and HQ are calculated using concentrations in excess of background.
4	Lead is evaluated using an EPA criterion based on blood lead modeling, and therefore, has no cancer or HQ calculation.
5	Chromium (total) results are excluded from this evaluation where there are speciated Chromium VI results available; otherwise the Chromium (total) results are evaluated as Chromium VI.
6	All concentrations are the maximum detected, except the concentrations in bold are 95% UCLs calculated using all-depth soil data collected at this area.

Brad Saunders

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Jun 18, 2009 08:02